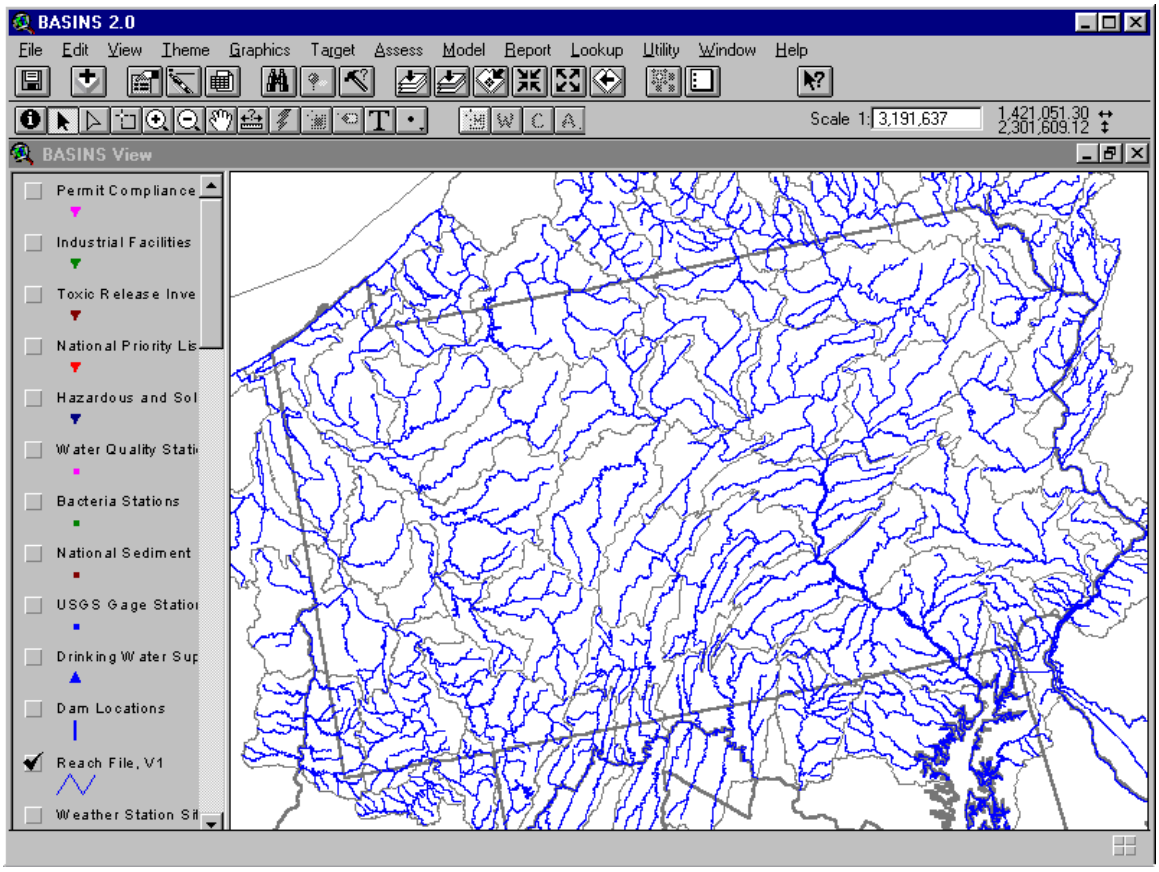
Section 5
BASINS Components

BASINS Customized ArcView Interface

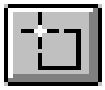
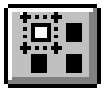
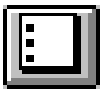
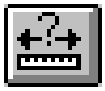
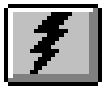
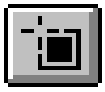
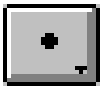
The BASINS customized ArcView Interface contains all of the menu, button, and tool bar items that are present in the standard ArcView interface. These standard components provide access to ArcView's data query, spatial analysis, and map generation tools. The BASINS interface also contains a number of additional menus and tool bar items that execute BASINS Assessment Tools, BASINS Utilities, Watershed Characterization Reports, Stream Water Quality Models, and the Nonpoint Source Model (NPSM). The BASINS Customized ArcView Interface is displayed in Screen 5.1.



Screen 5.1

Standard ArcView Tool Bar Items

The following ArcView tool bar items are present in the BASINS Customized ArcView Interface. They are used throughout this manual. Use this section as a reference during execution of BASINS functions.

Save Project		Zoom In		Select Feature	
Theme Properties		Zoom Out		Zoom In	
Edit Legend		Zoom to Previous Extent		Zoom Out	
Open Theme Table		Select Features Using Graphic		Pan	
Find		Clear Selected Features		Measure	
Locate Address		Help		Hot Link	
Query Builder		Change Projection		Area of Interest	
Zoom to Full Extent		Identify		Label	
Zoom to Active Theme(s)		Pointer		Text	
Zoom to Selected		Vertex Edit		Draw Point	

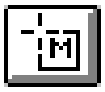
BASINS Assessment Tools

The BASINS Assessment Tools consist of three geographically based tools—***TARGET***, ***ASSESS,*** and ***Data Mining***. These tools can be used to assess in-stream water quality conditions and point source discharges at the regional, watershed, and stream segment levels.

TARGET is accessed from the *Target* menu and provides two options: *Water Quality* and *Permitted Discharges*.

ASSESS is accessed from the *Assess* menu and provides the same options as ***TARGET***, *Water Quality* and *Permitted Discharges*.

Data Mining is executed by selecting the **Data Mining** tool bar item. This tool is only available when either the PCS, *Water Quality Stations*, or *Bacteria Station Theme* is active.

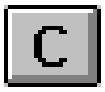


BASINS Utilities

The BASINS Utilities provide the user with the ability to delineate watersheds, import local data, reclassify land use data, manipulate water quality observation data, reclassify DEM data, query various environmental databases, and view projection properties.

Watershed Delineation enables the user to define watershed boundaries at a level smaller than the 8-digit Cataloging Unit Boundary level. This function is executed by selecting the **Watershed Delineation** tool bar item. This tool is available when a *Watershed Boundary Theme* is active.

A watershed boundary created in BASINS can be deleted using the **Watershed Cleaning** tool bar item.



Import enables the user to import watershed, land use, DEM, and Reach File Version 3 data for use with BASINS, or to import any theme as a standard ArcView coverage. ***Import*** is executed by selecting the **Import** tool bar item.

Land Use Reclassification enables the user to reclassify a land use coverage imported into BASINS. This function is accessed by selecting *Re-classify Land Use* from the *Utility* menu.

Water Quality Observation Station Management enables the user to access and manipulate water quality observation station information and data. It is composed of a set of station management tools and two utilities for appending and exporting water quality observation data. The station management tools are accessed by selecting the **Station Management** tool bar item. The other tools can be accessed by selecting either *Append Water Quality Observation Data* or *Export Water Quality Observation Data* from the *Utility* menu. These tools are available when the *Water Quality Observation Theme* is active.

DEM Reclassification enables the user to reclassify DEM polygon data to better represent a study area. This function is accessed through selection of *Re-classify DEM* from the *Utility* menu.

Lookup Tables enable the user to query a number of environmental databases and view projection properties. This function is accessed through selection of *Water Quality Criteria*, *Standard Industrial Codes*, *STORET Agency Codes*, or *Projection Parameters* from the *Lookup* menu.

Watershed Characterization Reports

Watershed Characterization Reports assist in summarizing key watershed information. A number of reports can be developed to inventory and characterize both point and nonpoint sources at the watershed and subwatershed scale. ***Watershed Characterization Reports*** can be created by selecting *Point Source*

Inventory Report, Water Quality Summary Report, Landuse Distribution Report, Toxic Air Emission Report, State Soil Characteristic Report, or *Watershed Topographic Report* from the *Report* menu.

Stream Water Quality Models

Two stream water quality models can be executed from BASINS: ***QUAL2E*** and ***TOXIROUTE***. The BASINS system develops the input files required to run both models.

QUAL2E is a steady-state, one-dimensional receiving water quality model. It is accessed through selection of *QUAL2E* from the *Models* menu.

TOXIROUTE performs simple assessments of pollutant concentrations in rivers. It is accessed through selection of *TOXIROUTE* from the *Models* menu.

Visualization enables the user to graphically view output from both ***QUAL2E*** and ***TOXIROUTE***. This graphical visualization is accessed through selection of *Visualize* from the *Models* menu.

Nonpoint Source Model (NPSM)

The ***Nonpoint Source Model (NPSM)*** is a planning-level watershed model integrating both point and nonpoint sources. It is capable of simulating nonpoint source runoff and associated pollutant loadings, accounting for point source discharges, and performing flow and water quality routing through stream reaches and well-mixed reservoirs. It is executed through selection of *NPSM* from the *Models* menu.

BASINS Data Products

The BASINS Version 2.0 system is distributed with several national, regional, and state-level data products. The data consist of base cartographic products (such as state and county boundaries) and environmental products (such as water quality monitoring and industrial facility locations). These data products are accessible within the BASINS system through Arcview standard mapping and analysis tools and through BASINS customized tools and models.

Table 5.1 is a list of supported data products in BASINS Version 2.0, which also indicates data owners and reference web sites when available. The list is arranged so that it matches the default listing of data products in the table of contents of the BASINS View window. The name of the Arcview theme and related DBF tables are shown for each data product. The table also shows what models and tools are used to access the data product. Appendix A provides the definition of every attribute field within each data product. All BASINS2 data is documented using the Federal Geographic Data Committee (FGDC) metadata standard. A copy of the metadata can be obtained from www.epa.gov/ost/basins/metadata.htm.

Table 5.1 BASINS Version 2.0 Data Products

BASINS Data Product	Theme Name	File Name	Customized Models and Tools*
Permit Compliance System (PCS) Sites and Computed Annual Loadings Source: US Environmental Protection Agency (USEPA) Ref: http://www.epa.gov/enviro	Permit Compliance System	pcs.dbf pcs.shp pcs.shx	Target, Assess, Data Mining, Point Source Inventory Report, NPSM, QUAL2E, TOXIROUTE
Related Table Names:	Permitted Discharges 1991 Permitted Discharges 1992 Permitted Discharges 1993 Permitted Discharges 1994 Permitted Discharges 1995 Permitted Discharges 1996 Permitted Discharges Parameter Table PCS Code Description	pcsld91.dbf pcsld92.dbf pcsld93.dbf pcsld94.dbf pcsld95.dbf pcsld96.dbf pcs_prm.dbf pcs_code.dbf	
Industrial Facilities Discharge (IFD) Sites Source: USEPA	Industrial Facilities Discharge Sites	ifd.dbf ifd.shp ifd.shx	NPSM QUAL2E TOXIROUTE
Toxic Release Inventory (TRI) Sites and Pollutant Release Data Source: USEPA Ref: http://www.epa.gov/enviro	Toxic Release Inventory	tri.dbf tri.shp tri.shx	Toxic Air Emission Report
Related Table Names:	TRI Air Emission Data 1987 TRI Air Emission Data 1988 TRI Air Emission Data 1989 TRI Air Emission Data 1990 TRI Air Emission Data 1991 TRI Air Emission Data 1992 TRI Air Emission Data 1993 TRI Air Emission Data 1994 TRI Air Emission Data 1995 TRI Land Release Data 1987 TRI Land Release Data 1988 TRI Land Release Data 1989 TRI Land Release Data 1990 TRI Land Release Data 1991 TRI Land Release Data 1992 TRI Land Release Data 1993 TRI Land Release Data 1994 TRI Land Release Data 1995 TRI POTW Data 1991 TRI POTW Data 1992 TRI POTW Data 1993 TRI POTW Data 1994 TRI POTW Data 1995 TRI Underground Injection Data 1987 TRI Underground Injection Data 1988 TRI Underground Injection Data 1989 TRI Underground Injection Data 1990 TRI Underground Injection Data 1991	tri_ai87 tri_ai88 tri_ai89 tri_ai90 tri_ai91 tri_ai92 tri_ai93 tri_ai94 tri_ai95 tri_lr87 tri_lr88 tri_lr89 tri_lr90 tri_lr91 tri_lr92 tri_lr93 tri_lr94 tri_lr95 tri_pw91 tri_pw92 tri_pw93 tri_pw94 tri_pw95 tri_ui87 tri_ui88 tri_ui89 tri_ui90 tri_ui91	

* In addition to ArcView standard mapping and analysis tools

Table 5.1 Continued

BASINS Data Product	Theme Name	File Name	Customized Models and Tools*
Related Table Names (cont):	TRI Underground Injection Data 1992 TRI Underground Injection Data 1993 TRI Underground Injection Data 1994 TRI Underground Injection Data 1995 TRI Water Discharge Data 1987 TRI Water Discharge Data 1988 TRI Water Discharge Data 1989 TRI Water Discharge Data 1990 TRI Water Discharge Data 1991 TRI Water Discharge Data 1992 TRI Water Discharge Data 1993 TRI Water Discharge Data 1994 TRI Water Discharge Data 1995 TRI Parameter Table	tri_ui92 tri_ui93 tri_ui94 tri_ui95 tri_wd87 tri_wd88 tri_wd89 tri_wd90 tri_wd91 tri_wd92 tri_wd93 tri_wd94 tri_wd95 tri_prm.dbf	
Superfund National Priority List Sites Source: USEPA Ref: http://www.epa.gov/enviro	National Priority List Sites	cerclis.dbf cerclis.shp cerclis.shx	
Resource Conservation and Recovery Information System (RCRIS) Sites Source: USEPA Ref: http://www.epa.gov/enviro	Hazardous and Solid Waste Sites	rcris.dbf rcris.shp rcris.shx	
Water Quality Monitoring Stations & Data Summaries Source: USEPA Ref: http://www.epa.gov/OWOW/STORET/	Water Quality Stations	wq_stat.dbf wq_stat.shp wq_stat.shx	Target, Assess, Data Mining, Water Quality Summary Report
Related Table Names:	Water Quality Data 70-74 Water Quality Data 75-79 Water Quality Data 80-84 Water Quality Data 85-89 Water Quality Data 90-94 Water Quality Data 95-97 Water Quality Parameter Table	wq_d7074.dbf wq_d7579.dbf wq_d8084.dbf wq_d8589.dbf wq_d9094.dbf wq_d9597.dbf wq_parm.dbf	
Bacteria Monitoring Stations & Data Summaries Source: USEPA Ref: http://www.epa.gov/OWOW/STORET/	Bacteria Stations	bac_stat.dbf bac_stat.shp bac_stat.shx	Data Mining
Related Table Names:	Bacteria Data 70-74 Bacteria Data 75-79 Bacteria Data 80-84 Bacteria Data 85-89 Bacteria Data 90-94 Bacteria Data 95-97 Bacteria Parameter Table	bc_d7074.dbf bc_d7579.dbf bc_d8084.dbf bc_d8589.dbf bc_d9094.dbf bc_d9597.dbf bc_parm.dbf	

Table 5.1 Continued

BASINS Data Product	Theme Name	File Name	Customized Models and Tools*
National Sediment Inventory (NSI) Stations & Database Source: USEPA	National Sediment Inventory Stations	nsi.dbf nsi.shp nsi.shx	
Related Table Names:	NSI Biotoxicity Data NSI Tissue Residue Data NSI Reference Values NSI Sediment Chemistry Data NSI Watershed Summary Data	nsi_bio.dbf nsi_tis.dbf nsi_ref.dbf nsi_sed.dbf nsi_wsh.dbf	
Gage Sites Source: USEPA	USGS Gage Stations	gage.dbf gage.shp gage.shx	
Dam Locations Source: US Army Corps of Engineers (1996)	Dam Locations	dam.dbf dam.shp dam.shx	
Reach File, Version 1 (RF1) Source: USEPA Ref: http://www.epa.gov/enviro/html/esdls/data_sets.html	Reach File, V1	rf1.dbf rf1.shp rf1.shx	All report tools, NPSM, QUAL2E, TOXIROUTE
Weather Station Sites Source: National Oceanic and Atmospheric Administration (NOAA) Ref: http://www4.noaa.gov	Weather Station Sites Weather Station Area	metpt.dbf metpt.shp metpt.shx met_stat.dbf met_stat.shp met_stat.shx	
Drinking Water Supply (DWS) Sites Source: USEPA	Drinking Water Supply Sites	dws.dbf dws.shp dws.shx	
Watershed Data Stations & Database Source: NOAA Ref: http://www4.noaa.gov/	WDM Weather Data Stations	wdm.dbf wdm.shp wdm.shx	NPSM
Hydrologic Unit Boundaries Source: US Geological Survey (USGS)	Cataloging Unit Code Cataloging Unit Boundaries Accounting Unit Boundaries	cat.dbf cat.shp cat.shx catpt.dbf catpt.shp catpt.shx acc.dbf acc.shp acc.shx	Data Extraction, Target, Assess, Data Mining, Watershed Delineation, all report tools, all utilities (except Lookup Tables), NPSM, QUAL2E, TOXIROUTE
Major Roads Source: Federal Highway Administration	Major Roads	fhards.dbf fhards.shp fhards.shx	
Populated Place Locations Source: USGS	Place Names - (state postal abbreviation)	(ST)ppl.dbf (ST)ppl.shp (ST)ppl.shx	

* In addition to ArcView standard mapping and analysis tools

Table 5.1 Continued

BASINS Data Product	Theme Name	File Name	Customized Models and Tools*
Urbanized Areas Source: US Bureau of the Census	Urban Area Names Urban Area Boundaries	urban_nm.dbf urban_nm.shp urban_nm.shx urban.dbf urban.shp urban.shx	
State and County Boundaries Source: USGS	County Names County Boundaries State Boundaries	cntypt.dbf cntypt.shp cntypt.shx cnty.dbf cnty.shp cnty.shx st.dbf st.shp st.shx	Data Extraction
EPA Regions Source: USEPA	EPA Region Boundaries	epa_reg.dbf epa_reg.shp epa_reg.shx	All report tools
EPA Ecoregions Source: USEPA Ref: http://nsdi.epa.gov/nsdi/projects/useco.htm	Ecoregions (Level III)	ecoreg.dbf ecoreg.shp ecoreg.shx	
National Water Quality Assessment Study Unit Boundaries Source: USGS Ref: http://wwwrvares.er.usgs.gov/nawqa	NAWQA Study Unit Boundaries	nawqa.dbf nawqa.shp nawqa.shx	
Minerals Availability System/Mineral Industry Location (MAS/MILS) Source: US Bureau of Mines	Mineral Data	mines.dbf mines. shp mines.shx	
Water Quality Stations and Observation Data Source: USEPA Ref: http://www.epa.gov/OWOW/STORET/	Water Quality Observation Stations	wqobs.dbf wqobs.shp wqobs.shx (cu).dbf wqobs_prm.dbf	Water Quality Management tools
1996 Clean Water Needs Survey Source: USEPA	1996 Clean Water Needs Survey	1996cwns.dbf 1996cwns.shp 1996cwns.shx	
State Soil and Geographic (STATSGO) Database Source: USDA-NRCS Ref. http://www.ftw.nrcs.usda.gov/stat_data.html	State Soil	statsgo.dbf statsgo.shp statsgo.shx	State Soil Characteristic Report
Related Table Names:	Soil Component Data Soil Layer Data	statsgoc.dbf statsgol.dbf	

* In addition to ArcView standard mapping and analysis tools

Table 5.1 Continued

BASINS Data Product	Theme Name	File Name	Customized Models and Tools*
Managed Area Database Source: National Aeronautics and Space Administration Ref: http://www.ncgia.ucsb.edu/sb/mod/mod.html	Managed Area Database	mad.dbf mad.shp mad.shx	
Classified Shellfish Areas Source: NOAA Ref: http://state-of-coast.noaa.gov	Classified Shellfish Areas	csa.dbf csa.shp csa.shx	
Land Use and Land Cover Souce: USGS Ref: http://nsdi.usgs.gov/nsdi/products/lulc.html	Land Use Index L_(USGS Quadrangle Name)	lulcndx.dbf lulcndx.shp lulcndx.shx l_(quad).dbf l_(quad).shp l_(quad).shx	Import Tool, Landuse Distribution Report, Landuse Re-classification, NPSM
Reach File Version 3 (RF3) Alpha Release Source: USEPA and Reach File Version 2.1 Source: USGS Ref: http://www.streamnet.org/pnwr/pnwrhome.html	Reach File, V3 (CU)	(cu).dbf (cu).shp (cu).shx	Import Tool Watershed Reports NPSM
Digital Elevation Map Source: USGS Ref: http://edcwww.cr.usgs.gov/nsdi/gendem.htm	DEM (CU)	(cu).dbf (cu).shp (cu).shx	Import Tool, Watershed Topographic Report, DEM Re-classification
Listing of Fish and Wildlife Advisories Source: USEPA			
Related Table Names:	Fish and Wildlife Advisory (1996)-Index Fish and Wildlife Advisory (1996)-Listing	lfwa96.dbf lfwa96ad.dbf	
Lookup Tables			Lookup Tables
Related Table Names:	Water Quality Criteria Table STORET Agency Codes Standard Industrial Classification Codes	wqcriter.dbf storetag.dbf sic.dbf	

* In addition to ArcView standard mapping and analysis tools